Competition in the Dutch mortgage market

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NOTES AND COMMUNICATIONS

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1 INTRODUCTION

The scale of European banking institutions has changed over the last two decades. Due to internationalisation, deregulation, and liberalisation of financial markets in especially the eurozone, market concentration of the European banking sector has increased substantially. Consolidation applies to the financial industry in general, but it holds particularly for the banking sector. In this paper I focus on the consequences of concentration for a specific banking market, the market for mortgage loans in the Netherlands. In general a mortgage market might be concentrated because of its 'geographical' nature. As Degryse and Ongena (2005) show, distance and lending activity are related in specific banking markets. The issue of concentration is important in the Netherlands. Three large banks, Rabobank, ABN AMRO Bank, and ING, have a market share of about 70 percent. Together with the Belgian–Dutch Fortis bank, these three institutions are influential players on Dutch banking markets. The mortgage market, with the market for loans to small- and medium-sized enterprises and the deposit market, is object of analysis of the Dutch competition authority (NMa (2003)). The main concern is whether the high market concentration leads to collusive pricing. Since collusion is hard to detect (Motta (2004)), I focus on econometric tools to signal lack of competition in the mortgage market.

Before turning to the mortgage market itself, I first discuss the general knowledge about bank concentration. Table 1 denotes the number of credit institutions in different EU countries as of December 2001 and December 2005 and the Herfindahl-Hirschmann Index (HHI) of the European loan markets in 1993 and 2002. The table tells two stories. Table 1 reveals that in France, Germany, the UK, and certainly the Netherlands the number of credit suppliers has decreased substantially since the start of the euro, which could indicate an increase of bank concentration in general. Although the number of institutions as such does not reveal specific banking market competition fully, its change illustrates the consolidation battle. Table 1 includes the HHI for the loans market based on individual bank observations from the Bankscope data set, as compiled by Maudos and de Guevara (2005). The HHI, measuring the sum of squared market shares, ranges from 0 (infinite amount of firms) to 10,000 (one firm). Values of the HHI below 1000 are

TABLE 1 – BANK CONCENTRATION IN THE EU

	Number of credit institutions		Herfindahl-Hirschmann Index	
	December 2001	December 2005	1993	2002
Austria	851	831	742	368
Belgium	133	117	1057	1645
Denmark	207	200	1742	1112
Finland	392	393	2490	2384
France	1715	1491	431	489
Germany	2577	2148	214	180
Greece	103	95	3137	1446
Ireland	253	320	2099	872
Italy	873	851	310	317
Luxembourg	634	554	359	717
Netherlands	574	411	1963	1207
Portugal	216	191	700	1573
Spain	546	507	463	514
Sweden	180	233	1210	1047
United Kingdom	499	440	755	555

Sources: Number of credit institutions: European Central Bank: www.ecb.de;
Herfindahl-Hirschmann Index of the loans: Maudos and de Guevara (2005)

generally seen to be consistent with a lack of market concentration. HHI's between 1000 and 1800 are indicating limited concentration, while values above 1800 indicate concentrated markets. Table 1 shows that the Dutch market for loans in the aggregate is less concentrated in 2002 than in 1993. It is good to note that this result applies to the loans market in the aggregate and not to the market of concern in this note, the mortgage market, for which concentration data is not available. In the past, international institutions like the OECD (2000) and the Group of Ten (2001) have documented, debated, and shown concern about the consequences of the financial merger movement. There is serious concern for both competition and stability effects (see Carletti et al. (2002)). According to Carletti et al. concentration has in some cases led to a deterioration of a previously concentrated industry (as in Belgium, France, and The Netherlands).

The Dutch mortgage market is typically a market that should be carefully monitored, as previous research has shown. Mojon (2000) argues that the pass-through of official interest rate changes into bank mortgage rates in the Netherlands is about half the Euro-zone average. I note that this finding may reflect the fact that Dutch mortgage contracts have a rather high maturity as compared to other European countries, but as is shown below, the Mojon concern is still relevant. Toolsema and Jacobs (2007), using macro

data, conclude that there is asymmetric pass-through of funding costs into mortgage interest rates in the sense that Dutch banks tend to increase interest rates instantly when costs rise, while waiting to lower the rates when costs drop. If so, consumers will not benefit. According to Corvoisier and Gropp (2002) the market power hypothesis at least applies for customer and mortgage loans of euro area banks in general and so for the Netherlands in particular. Kok Sörensen and Werner (2006) find there is a considerable power in so-called pass-through of the funding rate on the mortgage rate for the Netherlands (and Germany) and that adjustment toward equilibrium price setting has slowed down in recent years. This finding also becomes apparent in the initiative of the Dutch competition authority NMa in its Monitor of the Financial Sector (NMa (2003)). In the 2003 report the NMa comments on the loss of consumer welfare due to possible market power in the mortgage market and concludes that competition in the Dutch mortgage market is an issue of concern. On the other hand De Haas et al. (2000) conclude in a broad study that there is sufficient competition in the Dutch banking sector. This finding is probably intuitive to Dutch agents that enter the mortgage market, because there is an overwhelming number of intermediaries (not only private banks) that offer a wide variety of products.

I comment on methods to detect and survey the implications of a lack of competition in the Dutch mortgage market. In section 2 I shortly review the macroeconomic relevance of the housing and mortgage markets in the Dutch economy. It is illustrated that even short-run distortions from competitive results can lead to substantial consumer losses. Given the long-run nature of the average Dutch mortgage contracts (and the contractual agreements that support the longevity), mispricing either leads to costly prepayment of existing contracts or too high debt servicing burdens. Next I review old and new methods to detect market power using price data (see section 3). The focus is on relatively new approaches that center around price leadership and sluggishness in adjustment of interest rates, possible collusion effects, especially in cases of cheaper funding costs. I illustrate the issue of price leadership in the Dutch mortgage market and conclude with policy implications in section 4.

2 HOUSING AND MORTGAGES IN THE NETHERLANDS

In the Netherlands about 6.6 million houses represent a total value of more than 1300 billion euro in 2005. 3.6 million houses are privately owned and financed for about 40 per cent by mortgage loans. Private housing wealth has increased substantially since 1985, mainly due to the real price increase up to 2004 by 268 percent (based on data supplied by the Bank for International Settlements). Although house ownership is rather low in the Netherlands (see Catte et al. (2004), who show that in the eurozone only Germany has a lower

owner ratio) residential mortgage debt as a percentage of GDP is quite large (about 80 percent in 2002) and the typical loan-to-value ratio is high (90 percent is typical). The macroeconomic sensitivity to the housing (and its financing) market is therefore supposed to be substantial.

Using evidence for multiple economies several authors find that comparing the impact of equity and housing price shocks, the latter typically have a stronger impact on output (Catte et al. (2004), Tsatsaronis and Zhu (2004), Otrok and Terrones (2005), and Chirinko et al. (2004)). The main arguments given are that the marginal propensity to consume out of housing wealth is larger than its equivalent out of financial wealth, and house ownership is more widely spread than equity ownership. Table 2 presents estimated marginal propensities to consume out of financial and housing wealth for a selected number of countries as produced by Catte et al. (2004, p. 16). Catte et al. estimated error correction models of private consumption in absolute levels and used the sample means to calculate the marginal propensities to consume. One can observe that the housing finance channel is most relevant for the UK and the Netherlands. Table 3 gives an overview of housing market and mortgage market indicators (Catte et al. (2004)). From the last column of this table one can observe that house ownership in the Netherlands is rather low compared to other EU economies. The high sensitivity to housing wealth changes makes the Dutch economy more vulnerable, which is partly compensated by its alleged lower impact via ownership. But in general these facts also stress the vulnerability of Dutch consumption to (the costs of) housing price shocks. Financial fragility or vulnerability in the sense of Bernanke and Gertler (1999) could lead to serious distributional effects to consumption of shocks to the housing markets, especially for those households that are highly leveraged. Even if bank competition would be perfect, financial fragility could lead to large swings in private consumption. Van Rooij (2002) addresses this issue for the Netherlands and concludes that especially newcomers in the housing market experience this financial fragility. He shows that a decrease of the housing prices has an impact on a substantial part of the houseowners, especially those with a loan-to-value ratio over 100 percent. So, given the importance of the housing market for the Dutch economy, special care should be given to the costs of financing. Compared to other economies the Dutch mortgage indebtedness is large (and has grown substantially in the last decades) and the Dutch loan-to-value percentage is rather high. Moreover, the maximum loan-to-value ratio exceeds the other maximum rates. The short-run sensitivity is dampened due to the long maturities of the loans, but as Jacobs et al. (2005) show, early prepayment of mortgages in specific cases has become normal (though expensive).

Tables 2 and 3 illustrate that there is a serious macro sensitivity to shocks in the housing market in the Netherlands. What about the sensitivity to cost changes at the micro level? A back on the envelope calculation of the

TABLE 2 – SHORT- AND LONG-RUN MARGINAL PROPENSITIES TO CONSUME

	Short-term		Long-term	
	Housing	Financial	Housing	Financial
France	..	..	..	0.02
Germany	..	0.01	..	0.02
Italy	..	0.01	0.01	0.01
Netherlands	0.02	..	0.08	0.06
Spain	0.01	..	0.02	0.02
United Kingdom	0.08	0.03	0.07	0.04

Source: Catte et al. (2004)

TABLE 3 – MORTGAGE AND HOUSING MARKET INDICATORS

	Residential mortgage debt 2002 (1992)	Typical (maximum) loan-to-value	Loan term	Owner occupation rate 2002 (1980)
Austria	– (-)	60 (80)	20–30	56 (52)
Belgium	27.9 (9.9)	83 (100)	20	71 (59)
Denmark	74.3 (63.9)	80 (80)	30	51 (52)
Finland	31.8 (37.2)	75 (80)	15–18	58 (61)
France	22.8 (21.0)	67 (100)	15	55 (47)
Germany	54.0 (38.7)	67 (80)	15	42 (41)
Greece	13.9 (4.0)	75 (80)	15	83 (75)
Ireland	36.5 (20.5)	66 (90)	20	77 (76)
Italy	11.4 (6.3)	55 (80)	15	80 (59)
Luxembourg	17.5 (23.9)	–(80)	20–25	70 (60)
Netherlands	78.8 (40.0)	90 (115)	30	53 (42)
Portugal	49.3 (12.8)	83 (90)	15	64 (52)
Spain	32.3 (11.9)	70 (100)	15	85 (73)
Sweden	40.4 (37.5)	77 (80)	<30	61 (58)
United Kingdom	64.3 (55.5)	69 (110)	25	69 (58)

Source: Catte et al. (2004)

consumer loss due to too high costs of mortgage financing leads to the following conclusions. Suppose that due to market power a consumer faces a cost of funding of a redemption free mortgage product that is 50 basis points too high. Using a house price of 200 thousand euro and a typical loan-to-value ratio of 90 percent this leads to an annual before-tax loss of 900 euro per year (depending on income this loss can be lowered to about 450 euro due to the special role of mortgages in the Dutch taxing system). But with an average mortgage interest rate of 5 percent this 10 percent increase of the costs leads to a lower valuation of the 20 thousand euro private wealth

with about 2 thousand euro. Given a marginal propensity to consume out of housing wealth of about 0.08 (see also Poterba (2000), for estimates of marginal propensities to consume) another 160 euro lower annual consumption will be the result. For the average household this is a serious loss of disposable income, which justifies serious testing of excessive profit margins on mortgage products. Two comments should be made. First, in 2004 86 percent of the mortgage products had a fixed interest rate. With a typical long-run (30 year term) fixing the too high interest rate seriously affects disposable income. A second remark needs to be made with respect to the type of mortgage products. Annuity and linear mortgages were popular instruments in 1995 (24 percent market share), but in 2004 only made a share of 6 percent (van Dijkhuizen (2005)). Savings (22 percent) and investment (25 percent) products are more popular and allow for cushioning of interest rate effects. The highly popular interest-only products have a market share of 40 percent in 2004 and allow for maximum tax benefits.

3 REVIEW OF COMPETITION TESTING

The debate on competition effects of bank concentration focuses on the conflict between two competing so-called structural hypotheses. The Structure-Conduct Performance (SCP) paradigm (Mason (1939)) relates a reduction in competition with increases in market power. Contrary, the efficient-structure (ES) paradigm (Demsetz (1973)) states that differences in market concentration reflect efficiency of growing firms. Antitrust agencies focus on these price effects of concentration and have concern for a reduction of consumer surplus (see Motta (2004)). It is hard though to support or reject either SCP or ES (see e.g. Bikker and Haaf (2002), Bikker (2004) for a detailed overview).

Instead of relating market competition and Lerner indexes, more recent work, in the so-called non-structural class, concentrates on testing profitability on the bank level in the Panzar–Rosse model or a specific banking market in the so-called Bresnahan–Lau test (see e.g. Bikker (2003)). The Panzar–Rosse test measures the sensitivity of bank profit to changes in input prices. It is assumed that banks operate in the long-run equilibrium, face a demand for their products with an elasticity larger than unity, and a homogeneous cost structure. Bikker and Haaf (2002) find for the Netherlands that there is perfect competition among large banks, but imperfect competition among small and medium-sized banks. The main disadvantage of the PR-test is that it applies to the institutional level and not the product market level. The Bresnahan-Lau test is a conjectural variations model and tests for the impact of competitor price changes on own pricing policies (see Bikker and Haaf (2002), Bikker (2003) for an extensive survey of results for e.g. the Netherlands for the loan and deposit markets). The studies do not find a rejection of the hypothesis of perfect competition for the Dutch market

for loans. Toolsema (2003) also finds support for competition on the Dutch market for consumer loans. De Haan and Sterken (2006) estimate a version of the Bresnahan–Lau-model for the loans market for 5-and 10-year contracts at the bank level (see also Coccorese (2005)) and conclude that all banks behave competitively. Given the lack of further evidence of these well-known approaches for the Dutch case I do not discuss these methods any further here and conclude that there is insufficient evidence of imperfect competition in mortgage markets so far.

As Carletti et al. (2006) show, high bank concentration leads to higher input efficiency, say a better access to the (larger) interbank money market or other funding markets on the one hand. Then it is an empirical matter whether this cost efficiency is transmitted into lower lending rates. Next I focus on these price considerations and address the issue of uncompetitive pricing and maybe even collusion. How sensitive is the Lerner index for cost changes? The literature on pass-through of interest rates is appropriate: how fast is the change in the selling price after a shock to the cost price? I focus on three elements in this discussion:

1. Are cost price changes reflected in long-term pricing policies?
2. Are cost price changes transmitted one-to-one in selling prices?
3. Are cost price changes passed on in a symmetric way?

Kok Sörensen and Werner (2006) give a clear view on the first two items for EU economies for various bank retail markets. They find that only for saving deposits there is no clear long-term relation between the retail rate and the market rate. This might be due to national regulations. For the mortgage market they find stable long-run equilibrium (co-integration) relations between the mortgage lending rate and the market interest rate. Toolsema and Jacobs (2007) also support a long-run equilibrium relation using aggregated data for the Netherlands. Using a recent daily dataset of the four large players on the Dutch mortgage market (1997–2003), De Haan and Sterken (2005) also confirm co-integration of Dutch mortgage and market rates. Cost price changes are found to be reflected in long-term pricing policies. Next the issue whether cost changes are transmitted one-to-one is relevant. Consider the model:

$$r_{\mathrm{ML}} = \alpha r_{\mathrm{M}} + \beta + \epsilon \tag{1}$$

where r_{ML} is the interest rate on mortgage loans, r_{M} is the market interest rate (on the same maturity), α is the pass-through parameter, β is the specific markup (representing the risk) and ϵ is an error term. One would expect $\alpha = 1$, but values of α larger than one might signal overshooting, and values of α smaller than one represent limited pass-through. Both over- or undershooting are the result of market imperfections, but need not to reflect solely market power (but can be founded by for instance asymmetric information as well). Kok Sörensen and Werner argue that overshooting might be due

to credit risk factors reflecting asymmetric information between banks and borrowers. They find for the Netherlands a pass-through parameter of 1.33, implying that there could be informational problems, like credit risk factors as suggested by Kok Sörensen and Werner. Den Butter et al. (1977) found also a large long-run pass-through parameter of 1.24 in the sample 1960.2–1974.1. De Haan and Sterken (2005) on the other hand find a value of α less than one for individual bank interest rates. Jacobs and Toolsema also find a value less than one: 0.90, again indicating incomplete transfer of costs. Using a recent sample, based on a newly published data set of the Dutch central bank (starting on a monthly basis from January 2003 to April 2006), I find for the relation between the macro interest rate on mortgage contracts with a maturity of 10 years or more and the most recent 10-year government bond interest rate a value $\alpha = 0.89$. See Table 4 for a more complete description of the long-run equation between the 10-year mortgage market interest rate and the 10-year funding rate.

Next it is interesting to analyse the speed of adjustment to the steady state equation. If this speed of adjustment is high, it could reflect higher competitive pressure. Now we can get two cases that resemble each other: a fast adjustment to a limited pass-through and a slower adjustment to a complete pass-through. Kok Sörensen and Werner find that the mortgage markets in the EU should be considered to have a rather fast adjustment toward its long-run relation on average. But Toolsema and Jacobs (2007) find for

TABLE 4 – ECM ESTIMATION RESULTS FOR 10-YEAR CONTRACTS

Long-run equation: $r^{10}_{ML,t} = \alpha r^{10}_{M,t} + \beta + \epsilon_t$		
		(t-value)
α	0.885	(8.894)
β	1.502	(3.911)
Durbin–Watson	0.397	
Short-run equation: $\Delta r^{10}_{ML,t} = \lambda \Delta r^{10}_{M,t} + \omega^+ \epsilon^+_{t-1} + \omega^- \epsilon^-_{t-1} + \nu_t$		
		(t-value)
λ	0.094	(1.789)
ω^+	−0.302	(5.128)
ω^-	−0.008	(0.082)
Observations	39	
Adjusted R^2	0.302	
S.E. of regression	0.066	
Durbin–Watson	1.856	
Wald test:	F-statistic	(p-value)
$H_0 : \omega^+ = \omega^-$ v $H_1 : \omega^+ \neq \omega^-$	6.071	(0.019)

the Netherlands lower values of adjustment toward the long-run equilibrium. Cost increases might be followed faster than cost decreases. Frost and Bowden (1999) present evidence of asymmetric pricing for the New Zealand mortgage markets, but find more upward than downward rigidity (which is beneficial to consumers). Allen et al. (1999), Haney (1988), and Toolsema and Jacobs (2007) find evidence of asymmetric pricing in the mortgage market though. In an Error Correction Model we can represent asymmetric adjustment of different types as follows. Consider:

$$\Delta R_{\mathrm{ML},t} = \sum_{s=0}^{n} \lambda^{+} \Delta R^{+}_{\mathrm{M},t-s} + \sum_{v=0}^{m} \lambda^{-} \Delta R^{-}_{\mathrm{M},t-v} + \omega^{+} \epsilon^{+}_{t-1} + \omega^{-} \epsilon^{-}_{t-1} + \nu_t \quad (2)$$

where $\omega^{+}, \omega^{-} < 0$ and ϵ are the residuals from the long run equation (1) and ν_t is a white noise residual. The superscripts + and − refer to the positive part and negative part of the time series, so that

$$X_t^{+} = \begin{cases} X_t & \text{if } X_t > 0 \\ 0 & \text{if } X_t < 0 \end{cases} \quad (3)$$

and

$$X_t^{-} = \begin{cases} 0 & \text{if } X_t > 0 \\ X_t & \text{if } X_t < 0 \end{cases} \quad (4)$$

The first two terms in equation (2) are current and lagged capital market interest rate increases and decreases, respectively. The number of lags are for decreases, m, and for increases, n. It is possible that there is asymmetric adjustment to the capital market interest rate changes, so-called *amount asymmetry* in the short run. I define short-run amount asymmetry as the case where $\sum \lambda^{+} \neq \sum \lambda^{-}$. Second, the adjustment process toward the long run can be asymmetrical. This so-called *adjustment* asymmetry is present if $\omega^{+} \neq \omega^{-}$. The basic hypothesis is that the amount and adjustment asymmetries will be more relevant for a market participant that is relatively strong. For example, a powerful bank will not immediately lower its interest rate after a cost decrease in order to increase profits. Toolsema and Jacobs (2007) and De Haan and Sterken (2005) find indeed evidence for asymmetric adjustment on the macro level and individual large bank level respectively for the Netherlands. De Haan and Sterken find stronger evidence of asymmetry for 5-year contracts, but more competitive results for 10-year contracts. Using the recent monthly data set over 2003–2006 for the 10-year maturities I find a significant adjustment asymmetry (see Table 4, for maturities of 5–10 year I find similar results), but not amount asymmetry (see the unique λ-estimate in Table 4). The asymmetry points at competitiveness for 5- and 10-year contracts at the macro level though, since downward adjustments are stronger than upward moves to the long-run equilibrium. Concluding, the first two indicators of

pass-through do not uniformly reveal evidence of market power, but there is some evidence of asymmetric pricing policy.

This brings the overview of testing competitiveness in the Dutch mortgage market to the last step: testing price leadership. Given the fact that four large banks dominate the Dutch mortgage market, there might be one of these banks that acts as a price leader. The fact that one bank may act as a price leader does not imply that the followers do not set interest rates competitively though. On the other hand price leadership is not seen as a market organization that appeals to perfect competition. There are three views on price leadership:

- Barometric price leadership: the price leader is the bank that responds more quickly than its rivals to changing costs and demand conditions, but does not in itself have significant market power. The price leader acts as a barometer for the rest of the banking industry.
- A dominant firm and competitive fringe of smaller firms. The dominant bank sets its own price providing a price umbrella for the other banks. In such a case market performance depends on relative costs and ease of market entry.
- Collusive price leadership. Coordination of pricing is viewed to be likely to be feasible only in industries that are highly oligopolistic, where products are close substitutes, with active barriers to entry, and banks face similar cost conditions.

Rotemberg and Saloner (1990) observe that barometric and dominant firm models are often inappropriate for industries in which equal-sized players sell differentiated products. In such industries one expects strategic behaviour by all players. If one bank for instance possesses superior information about demand, the less informed players might find it more profitable to follow he leader. It is likely that price leadership leads to price stickiness. Motta (2004) argues that collusion is more likely in concentrated markets, especially with equal strong players. This would hold for the case of the large three Dutch banks.

De Haan and Sterken (2006) test for price leadership using the data for both 5-and 10-year maturity mortgage contracts of the four large supplying banks. Using daily data they find clear evidence of price leadership by one of the banks, based on both an impulse-response analysis of a Vector Error Correction Model and a probit analysis of infrequent interest rate changes. Given the fact that interest rates are indeed changed infrequently, but in most cases in rather short time intervals, the model results appeal to both dominant and collusive price leadership. Using the same interest rate data set with information on market shares, De Haan and Sterken also estimate a conjectural variations model that signals competitive pricing though.

Summarizing the non-structural approaches, I come to the following conclusions:

1. The Dutch market for mortgage loans is a competitive market in the long run.
2. Pass-through of cost changes is close to one-to-one, confirming the previous conclusion. There is also evidence that in recent years transmission of costs has increased. Whether this is due to competition or technological innovation is unclear.
3. In the short run there might be asymmetries in the adjustment processes toward the long-run equilibrium. This can imply that in some cases cost increases are followed more directly than cost decreases.
4. There is evidence of a price leader in the Dutch mortgage market.

Price leadership is not a bad case in itself, but might be caused by corresponding marginal cost changes, mixed strategies, and product heterogeneity. But if price leadership signals collusive agreements, there is a serious task for antitrust authorities. As Motta (2004) shows, collusion is hard to detect. First, in the real world it is likely to observe advertised prices instead of effective contract interest rates (see also the data used in De Haan and Sterken, (2006)). Contract interest rates are typically hard to observe. Second, it is difficult to determine the monopoly price. Third, even if we know the monopoly price, how close should the actual interest rates on mortgage loans be to the monopoly rate? And if consumers are willing to pay the high markups, there is no case for antitrust authorities. Motta discusses the issue of parallel pricing as well. Instead of looking at price levels, he argues to look at the dynamics of interest rates. But even although parallel pricing sounds suspect (may be even combined with best price policies) it is no proof of collusion. Only if there is formal proof of communication between banks, one could establish the existence of collusion. So, as Motta (2004) argues, econometric methods like the ones discussed above are complementary tools in the process to detect imperfect competition instead of conclusive proof.

4 POLICY CONCLUSIONS

European banking markets have become more concentrated. For competition authorities concern about local financial consumer markets has increased. The Dutch market for mortgage loans is such a market (NMa (2003)). In this note I discuss old and new econometric methods to detect lack of competition, price leadership, or collusion in interest rate setting by large private banks. I argue that some of the tests indeed hint at non-competitive pricing policies, without formally giving proof of collusion. It is argued that Stackelberg pricing can be the result of dynamic competitive pricing strategies and is therefore not harmful as such. But price leadership can also be the result

of collusion. Detecting price leadership therefore should warn the Dutch antitrust authorities to monitor the market for mortgage loans. This monitoring is complicated though because, firstly, the market for mortgage loans is quite heterogeneous with respect to its product types. Differentiated products are available, which does not imply that collusion is absent. Under differentiated products, deviation from the agreed rates is costly. A deviant bank cannot expect to gain considerable market share from rivals unless it cuts interest rates substantially. Second, the initial sales of mortgage products to consumers is to a substantial amount the activity of specialized intermediaries. This implies that the marketing channels of mortgage loans are rather indirect, complicating serious control. And third, as explained, there can be differences between advertised and contractual interest rates on mortgage products. Consumers search for the cheapest offer made for their individual needs. This makes control of the advertised rates troublesome and would require insight into private contract data. Despite these drawbacks, competition in the Dutch mortgage market should be on the agenda of policy makers, competition authorities, and academic economists.

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